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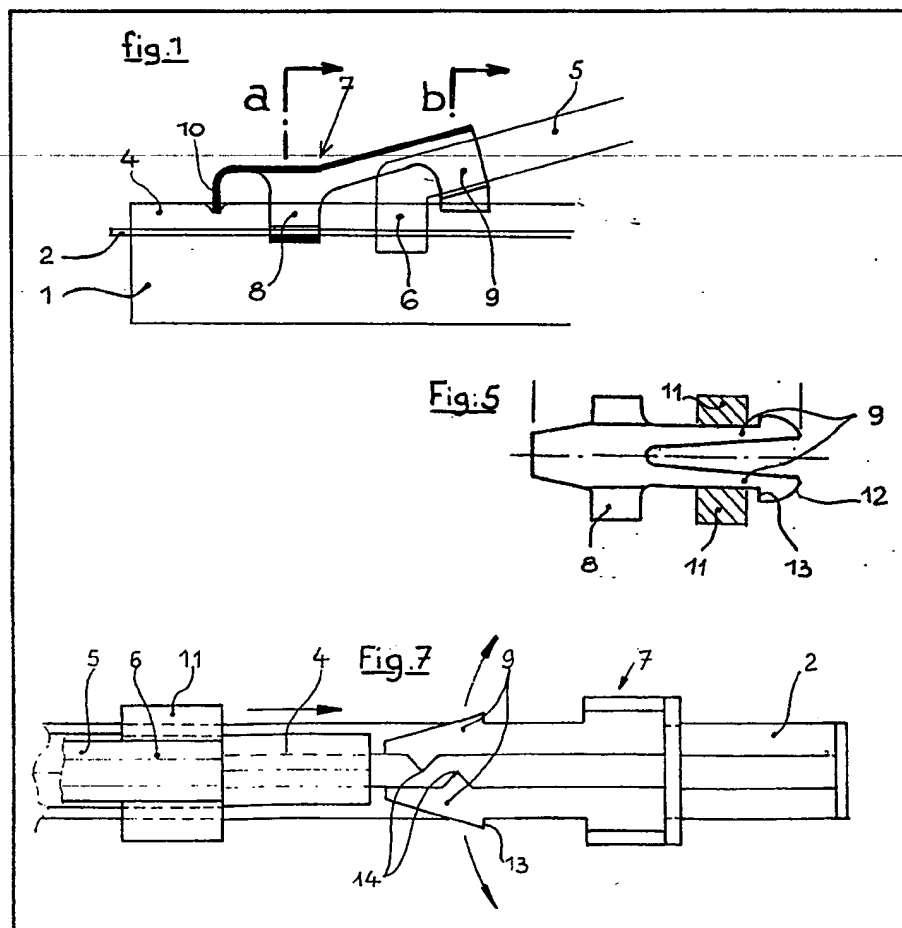
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(54) Wiper blade assembly

(57) A wiper blade 1 is connected to a yoke 5 by means of a clip 7 provided with lugs 8 so that it can slide along the blade, a resilient gripping portion 9 for gripping the yoke, and an anchoring element 10 which is anchored in the bead 4 of the blade. In modifications, see Fig. 5, the gripping portion may slide under claws 11 of the harness and grip them. The anchoring element need not be in the form of a blade, but may take the form of teeth 14, see Fig. 7. The wiper blade may have a metallic or thermoplastics backing strip 2. In the latter case, the anchoring element may be anchored in the strip.



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## SPECIFICATION

### Wiper blade assembly

5 The present invention relates to replacement blades for windscreen wipers utilised on automobile vehicles for wiping surfaces such as windscreen, rear windows or headlamps.

10 The known windscreen wipers comprise a harness mounted for pivoting on the free extremity of a wiper arm and carrying a wiper blade. The wiper blade itself comprises a blade rubber which is stiffened by a vertebra of metal or thermoplastic material. The wiper harness is generally formed of several yokes the fork-shaped extremities of which grasp the wiper blade.

In order to avoid the replacement of the harness when the wiper blade rubber is worn, it has been proposed to fit the wiper blade in detachable manner on its harness and consequently to provide replacement blades for these windscreen wipers.

To this end, the wiper manufacturers have provided complementary devices on the harness and on the blade, ensuring this detachable fitting. However in general the known replacement blades cannot be fitted on all existing types of harness, they are of quite high price and their fitting is often difficult.

The invention aims at obtaining a new replacement blade which can be adapted to all types of harness, which is economical and simple, and the fitting of which is easy and certain.

FIGURE 1 is a diagrammatic view, in lateral elevation, of one extremity of a blade with a rider piece fixed to the extremity of a harness yoke,

35 FIGURE 2 is a section view along the line *a* in FIGURE 1,

FIGURE 3 is a sectional view along the line *b* in FIGURE 1,

40 FIGURE 4 is analogous with FIGURE 1, but relates to a variant,

FIGURE 5 is a plan view of the rider piece according to FIGURE 4,

FIGURE 6 is analogous with FIGURE 1, but relates to a variant,

45 FIGURE 7 is a plan view of a rider piece according to a variant of the invention, before fitting on the blade,

FIGURE 8 is a plan view of the blade with the rider piece according to FIGURE 7, fitted for sliding,

50 FIGURE 9 is analogous with FIGURE 8, the rider piece being in the course of introduction on to one extremity of a harness yoke.

FIGURE 10 is a plan view of the assembly according to FIGURES 7 to 9, after fitting,

55 FIGURE 11 is a view of the assembly according to FIGURE 10, in lateral elevation,

FIGURE 12 is analogous with FIGURE 1, relating to another variant,

60 FIGURE 13 is a perspective view of the rider piece according to FIGURE 12.

In accordance with the invention this aim is achieved by a replacement blade for windscreen wipers which comprises a blade rubber stiffened by a vertebra of metal or thermoplastic material, and means for its fitting on the fork-shaped extremities

of yokes constituting a harness and forming part of the wiper, characterised in that the said fitting means are constituted by a rider piece mounted for sliding on the blade, the said rider piece comprising a gripper which is elastically deformable so as to come to lodge on both sides of a yoke of the harness, and an element for anchoring the rider piece in the blade.

70 With the replacement blade according to the invention the constitution of the actual blade is very simple and the rider piece, which likewise can be very simple, permits very easy fixing, with great security, of this blade on all types of wipers with replaceable blade. Moreover it is not necessary that the length of the blade should be strictly adapted to the windscreen wiper, which permits of reducing the number of lengths necessary to cover the different types of windscreen wipers. It is further possible for the blade to extend further on one side in relation to the harness, which can be advantageous for certain models of automobile vehicles.

85 Various forms of embodiment of such a blade are represented by way of non-limitative examples in the accompanying drawings, wherein:—

In the form of embodiment according to FIGURES 90 1 to 3, the blade comprises a blade rubber 1 stiffened by a metallic vertebra 2 having a longitudinal slot 3 through which there passes a bead 4 of the blade rubber 1. The blade is intended to be fitted on a harness comprising a yoke 5 the extremities of which, such as 6, form a fork which grasps the sides of the metallic vertebra 2.

In accordance with the invention the blade carries a rider piece 7 which is mounted for sliding on the lateral edges of the metallic vertebra 2 by means of two curved-in lugs 8. The rider piece 7 also comprises a gripper 9 the arms of which can be spaced elastically from one another in order to reclose around the yoke 5, above the latter. The rider piece further comprises an appendage 10 which is driven into the bead 4 of the blade rubber 1.

105 For fitting, the rider piece 7 is positioned as necessary on the metallic vertebra 2, the sliding being effected by a slight pivoting in the clockwise direction (in FIGURE 1) permitted by the play existing between the lugs 8 and the metallic vertebra 2. Then the blade is caused to slide between the extremities 6 of the yokes 5 until the gripper 9 comes into contact with the yoke 5 with which it is to co-operate. The elastic deformation of the gripper 9 permits of imprisoning the yoke 5 while tending to rock the rider piece 7 in the anti-clockwise direction (in FIGURE 1), which ensures the anchoring of the appendage 10 in the bead of the rubber 4. Dismantlement is effected by the converse operation. The rider piece 7 can be metallic or of thermoplastic material.

120 The form of embodiment according to FIGURES 4 and 5 is identical with the preceding, except that the gripper 9 is designed to penetrate between the prongs 11 of the fork constituted at the extremity 6 of the yoke 5, in the space left available between the bottom of this fork and the apex of the bead 4. To this end the gripper 9 is substantially flat and its two arms are terminated by rounded portions 12 each forming a shoulder 13 which lodges behind the extremity 6 of the yoke 5.

In the form of embodiment according to FIGURE 6, the gripper 9 recloses on the fork-shaped extremity 6 of the yoke 5, instead of reclosing upon the yoke itself as in the case of FIGURES 1 to 3.

5 In the form of embodiment according to FIGURES 7 to 11, as in the case of FIGURES 4 and 5, the gripper 9 penetrates between the prongs 11 of the fork constituted on the extremity 6 of the yoke 5. Moreover the interior of the arms of the gripper 9 comprises longitudinally staggered teeth 14 which  
10 penetrate into the base of the bead 4. The rider piece 7 is not in contact with the metallic vertebra 2 and thus has no lugs 8.

The fitting of the rider piece 7 is explained in FIG-  
15 URES 6 to 10. The arms of the gripper 9 are moved apart for the rider piece to be placed in position on the bead 4 (FIGURE 7). The arms then elastically approach one another (FIGURE 8), with the teeth 14 penetrating into the bead 4. When the gripper 9 is  
20 driven between the prongs of the fork 11 of the yoke 5, this anchorage is accentuated (FIGURE 9) and at the end of the driving in the arms of the gripper 9 separate slightly from one another as soon as the shoulders 13 have passed the arms 11, the teeth 14 how-  
25 ever remaining sufficiently anchored in the bead 4 to ensure the fixing of the blade (FIGURES 10 and 11).

The form of embodiment according to FIGURES 12 and 13 is more particularly intended for a blade the stiffening vertebra 2 of which is of thermoplastic  
30 material, the blade rubber 1 comprising no protruding bead. The rider piece 7, which is metallic, comprises a gripper 9 which comes to reclose around the yoke 5, while the lugs 8 are elastically transversely deformable. The anchoring of the rider piece 7 is  
35 effected by points 15 which are formed in the body of the rider piece and are driven into the upper surface of the vertebra 2 of thermoplastic material, when the rider piece 7 is driven in so that its lugs 8 may come to grasp the vertebra 2 laterally.

#### 40 CLAIMS

1. A replacement blade for windscreen wipers, the blade comprising a blade rubber stiffened by a  
vertebra of metal or thermoplastic material, and means for its fitting on the fork-shaped extremities  
45 of yokes constituting a harness and forming part of the wiper, wherein the said fitting means are constituted by a rider piece mounted for sliding on the blade, the said rider piece comprising a gripper which is elastically deformable in order to come to  
50 lodge on both sides of a yoke of the harness, and an element for anchoring the rider piece in the blade.

2. A blade according to Claim 1, wherein the arms of the said gripper surround the said yoke.

3. A blade according to Claim 1, wherein the  
55 arms of the said gripper are lodged within the extremity of the said yoke and protrude therefrom with a locking shoulder.

4. A blade according to Claim 1 and 3, wherein the rider piece comprises lateral lugs co-operating  
60 with the lateral edges of the vertebra.

5. A blade according to Claim 4, wherein said lugs are elastically transversely deformable.

6. A blade according to Claim 1 and 5, wherein  
65 said anchoring element is constituted by an appendage which penetrates into the upper face of the

blade rubber which protrudes above the vertebra.

7. A blade according to Claim 3, wherein said anchoring element is constituted by teeth formed within the arms of the said gripper and penetrating  
70 laterally into the blade rubber which protrudes above the vertebra.

8. A blade according to Claim 5, wherein the vertebra is of thermoplastic material and the blade rubber does not extend above the said vertebra, and  
75 wherein the said anchoring element is constituted by teeth formed in the lower face of the rider piece, which are driven into the upper face of the said stiffening vertebra.

9. A blade according to Claim 1 and 8, wherein  
80 said rider piece is metallic.

10. A blade according to Claim 1 and 8, wherein said rider piece is of thermoplastic material.

11. A replacement blade for windscreen wipers, substantially as described with reference to the  
85 accompanying drawings.

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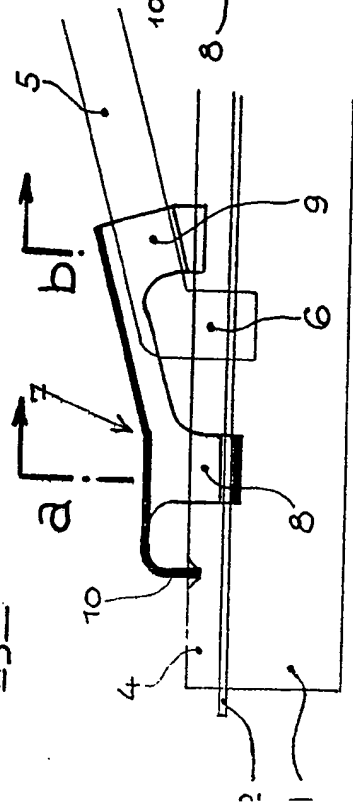


Fig. 2

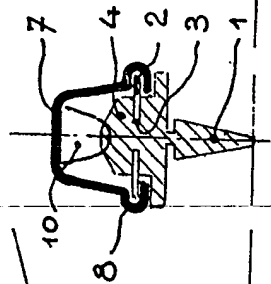


Fig. 3

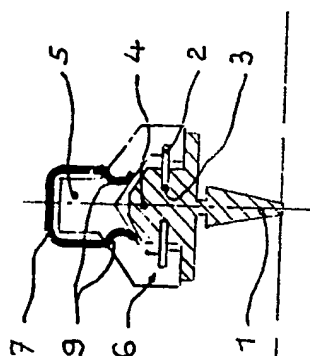


Fig. 4

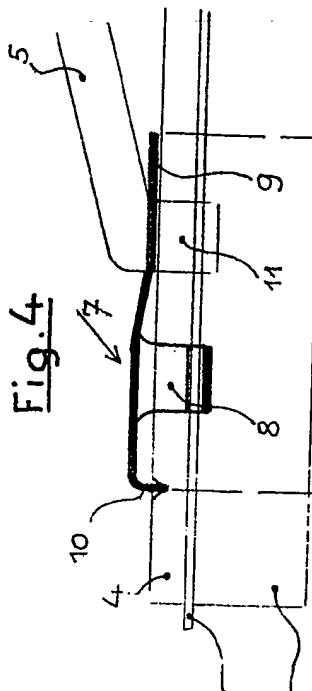
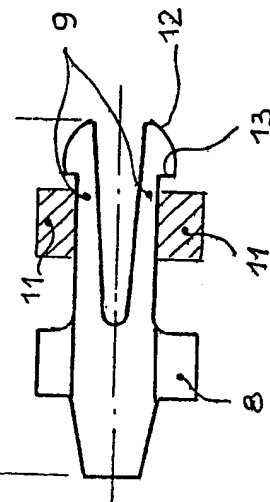
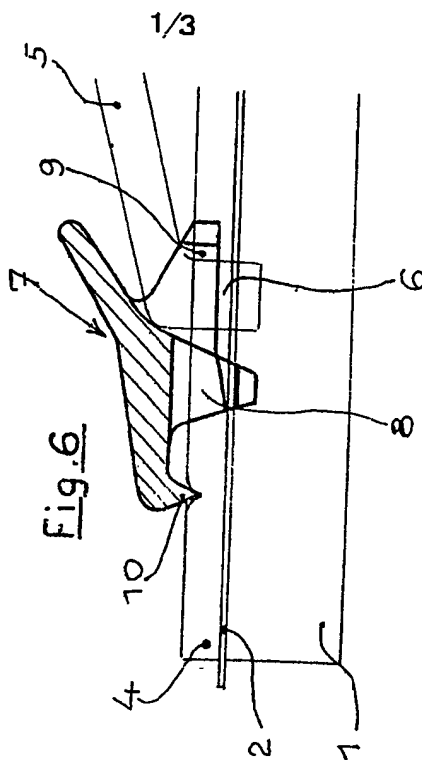


Fig. 5



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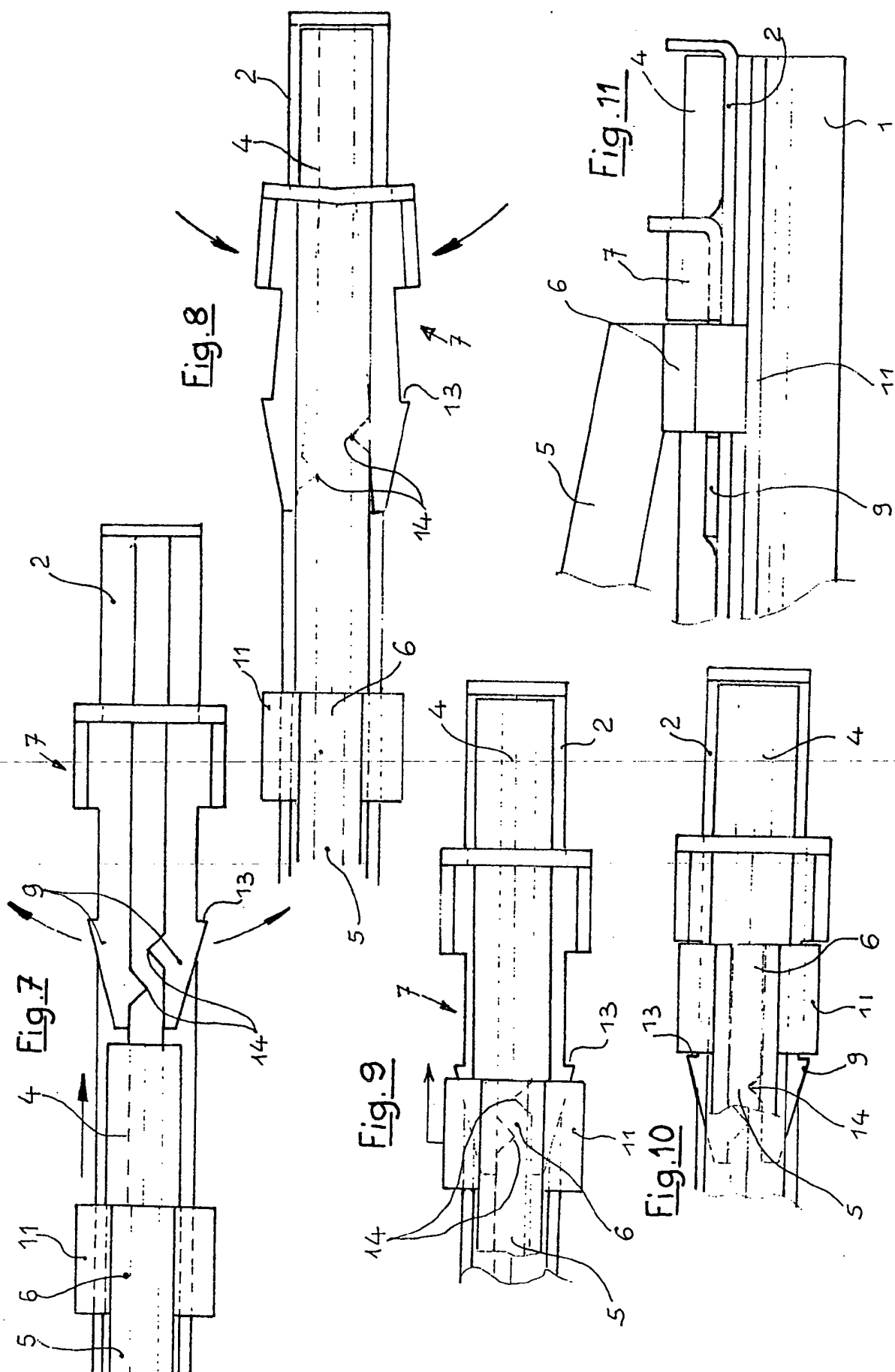


Fig. 12

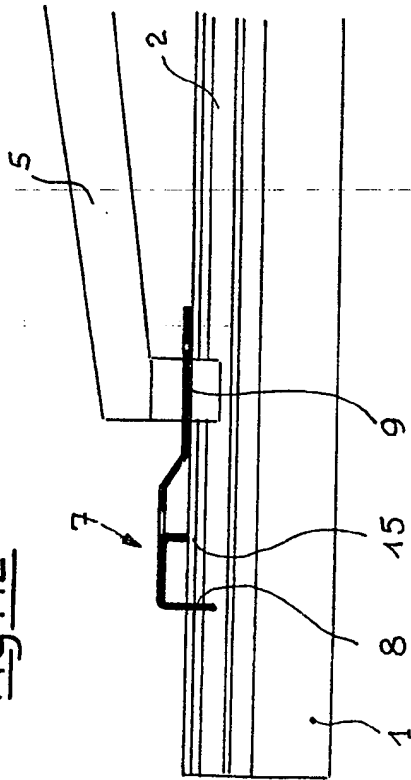


Fig. 13

